

Docket No. 2003-120-TAP

**CLAIMS:**

What is claimed is:

- 1 1. A tape guide roller for maintaining a position of  
2 tape media, the tape guide roller comprising:  
3 a tape guide surface, wherein at least one portion  
4 of the tape guide surface is curved and wherein at least  
5 another portion of the tape guide surface has  
6 substantially zero curvature.
- 1 2. The tape guide roller according to claim 1, further  
2 comprising:  
3 at least one hard stop portion on at least one end  
4 of the tape guide surface.
- 1 3. The tape guide roller according to claim 2, wherein  
2 the at least one hard stop is at an elevation higher than  
3 the tape guide surface.
- 1 4. The tape guide roller according to claim 1, wherein  
2 the tape guide surface has a surface with cylindrical  
3 symmetry.
- 1 5. The tape guide roller according to claim 4, wherein  
2 the cylindrical symmetry of the tape guide surface has a  
3 curvature defined by a function and wherein the function  
4 is one of a linear function and a nonlinear function.

Docket No. 2003-120-TAP

1 6. The tape guide roller according to claim 5, wherein  
2 the function is one of an exponential, brachistochrone,  
3 quadratic polynomial, cubic polynomial, or higher order  
4 polynomial.

1 7. The tape guide roller according to claim 1, wherein  
2 the tape guide surface provides a restoring force to a  
3 tape media to move the tape media to an optimal position.

1 8. The tape guide roller according to claim 1, wherein  
2 the tape guide surface has a positive curvature.

1 9. The tape guide roller according to claim 1, wherein  
2 the tape guide surface has a negative curvature.

1 10. The tape guide roller according to claim 1, wherein  
2 the tape guide roller is one of flanged, unflanged,  
3 spinning, stationary, contoured or not contoured.

1 11. A tape feeding mechanism for maintaining the  
2 position of tape media, the tape feeding mechanism  
3 comprising:  
4 at least one tape reel;  
5 a read/write head;  
6 a tape guide roller having a tape guide surface,  
7 wherein at least one portion of the tape guide surface is  
8 curved and wherein at least another portion of the tape  
9 guide surface has substantially zero curvature.

Docket No. 2003-120-TAP

1 12. The tape guide roller according to claim 11, further  
2 comprising:

3 at least one hard stop portion on at least one end  
4 of the tape guide surface.

1 13. The tape guide roller according to claim 12, wherein  
2 the at least one hard stop is at an elevation higher than  
3 the tape guide surface.

1 14. The tape guide roller according to claim 11, wherein  
2 the tape guide surface has a surface with cylindrical  
3 symmetry.

1 15. The tape guide roller according to claim 14, wherein  
2 the cylindrical symmetry of the tape guide surface has a  
3 curvature defined by a function and wherein the function  
4 is one of a linear function and a nonlinear function.

1 16. The tape guide roller according to claim 15, wherein  
2 the function is one of an exponential, brachistochrone,  
3 quadratic polynomial, cubic polynomial, or higher order  
4 polynomial.

1 17. The tape guide roller according to claim 11, wherein  
2 the tape guide surface provides a restoring force to a  
3 tape media to move the tape media to an optimal position.

1 18. The tape guide roller according to claim 11, wherein  
2 the tape guide surface has a positive curvature.

Docket No. 2003-120-TAP

1 19. The tape guide roller according to claim 11, wherein  
2 the tape guide surface has a negative curvature.

1 20. The tape guide roller according to claim 11, wherein  
2 the tape guide roller is one of flanged, unflanged,  
3 spinning, stationary, contoured or not contoured.